



EG&G DEFENSE MATERIALS, INC.

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June 22, 2000

GM0712-00

Ms. Janice D. Wards
Administrative Contracting Officer
DEPARTMENT OF THE ARMY
Operations Support Command (Prov)
P.O. Box 257
Stockton, Utah 84071

RE: Contract DACA87-89-C-0076 Tooele Chemical Agent Disposal
Facility (TOCDF)

SUBJECT: Event Report - Confirmed GB Agent Readings in the
Common Stack - May 8, 2000

REF: Occurrence Report 00-05-08-A1

Dear Ms. Wards:

Enclosed for your information, please find the subject report.
Should you have any questions, please contact Tom Kurkjy at ext.
7832.

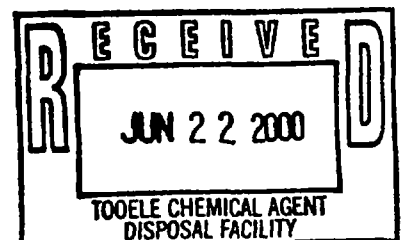
Sincerely,

Jackson P. Maddox
Deputy GM - Risk Management

^{TAK}
JPM/TAK/om

Enclosure: As Stated

cc: J. David Jackson, PMCD



CONFIRMED GB AGENT READINGS IN THE COMMON STACK

Occurrence Report No.: 00-05-08-A1

Action Level: 4

INTRODUCTION

Brief Description of Event:

After clearing a gate malfunction in Explosion Containment Room (ECR) B, the Deactivation Furnace System (DFS) Control Room Operator (CRO) was attempting to return the DFS to normal operating temperatures and pressures. On Monday, May 8, 2000, at 2326 hr, the Pollution Abatement System (PAS) 701C Common Stack Automatic Continuous Air Monitoring System (ACAMS) alarmed at 0.63 Allowable Stack Concentration (ASC). The Utilities CRO immediately activated the site agent alarm and instructed site personnel to mask. At 2328 hr, PAS 701A ACAMS alarmed at 1.57 ASC and at 2341 hr, PAS 702 DFS duct ACAMS alarmed at 1.45 ASC. The maximum reading on the Common Stack ACAMS during this period was 3.63 ASC on PAS 701C ACAMS at 2341 hr. The DFS CRO minimized flow through the system and mitigated the agent source in ECR B by shutting down the Induced Draft (ID) fans, combustion air blowers (CAB), and by closing the ID fan inlet damper. PAS 701A ACAMS and PAS 701C ACAMS cleared at 2352 hr and 2353 hr, respectively. PAS 702 ACAMS cleared at 0008 hr on May 9, and after three subsequent cycles of less than the Limit of Quantification (LOQ), site personnel unmasked at 0018 hr.

At 0023 hr on May 9, the DFS CRO attempted to purge the DFS Afterburner (AFB) in preparation for AFB re-light. At 0028 hr and 0029 hr, PAS 701B ACAMS and PAS 702 ACAMS alarmed at 0.39 ASC and 0.87 ASC, respectively. The Utilities CRO activated the site agent alarm and instructed site personnel to mask. At 0030 hr, PAS 701C ACAMS alarmed at 0.56 ASC. The maximum reading on the Common Stack ACAMS during this period was 0.81 ASC on PAS 701C ACAMS at 0032 hr. PAS 701C ACAMS and PAS 701B ACAMS cleared at 0038 hr and 0040 hr, respectively. The DFS CRO minimized flow through the system by shutting down the ID fans and CABs and by closing the ID fan inlet damper at 0044 hr. PAS 702 ACAMS cleared at 0056 hr, and after four subsequent cycles of less than LOQ, site personnel unmasked at 0107 hr.

Monitoring personnel collected the Common Stack Depot Area Air Monitoring System (DAAMS) samples after the first set of alarms at approximately 2347 hr and requested that the samples be analyzed on a priority basis. The DAAMS results confirmed agent. The results were provided to the Control Room personnel on May 9, 2000, at 0057 hr.

Monitoring personnel collected the Common Stack DAAMS samples from the second set of alarms. The DAAMS results confirmed agent. The Chemical Assessment Laboratory (CAL) personnel notified Control Room personnel with the results at 0230 hr.

Major Consequences:

This event resulted in a confirmed GB agent release from the Common Stack. All agent destruction operations have been discontinued until the formal investigations are completed, required corrective actions prior to start-up are completed, and a restart plan for operations is approved and implemented.

Site Investigative Team:

Team Member	Job Title	Shift
Tom Kurkly, Chairperson	Assistant to the General Manager	Days
Scott Winters	Engineering Supervisor	Days
Thomas Clark	Safety Engineer	Days
Kelvin Brito	Operations Scheduler	Days
Sheila Vance	Environmental Auditor	Days
Tom Salzman	Desert Chemical Depot Safety Engineer	Days
Kent Wilson	Battelle Laboratory QC Manager	Days

Personnel from the Site Investigative Team were assigned on Tuesday, May 9, 2000. In addition, Tom Salzman and Kent Wilson were added to the team on May 15, 2000, to represent Desert Chemical Depot (DCD) and the Laboratory/Monitoring group, respectively.

Investigative Plan:

The team will gather information pertinent to the event, including CRO logs, appropriate Process Data Acquisition and Recording System (PDARS) data, laboratory sample data results, calibration data for measuring and test equipment, appropriate procedural requirements, and any documents and records generated. Personnel associated with the event will be interviewed, including managers, supervisors, and workers, as appropriate. A Kepner-Tregoe® Analysis will identify direct, contributory, and root causes, including corrective actions necessary to prevent recurrence.

Key Due Dates:

Action	Due Date
Kepner-Tregoe® and Corrective Action Determinations	5/30/00
Complete Investigative Report	6/05/00
Corrective Action Recommendations to RMB* for approval	6/14/00
Issue Final Report	6/16/00

*RMB = Risk Management Board

NARRATIVE OF EVENT

On May 8, 2000, C-Crew (day shift) was processing M56 rockets in the DFS. While the Liquid Incineration Furnace 1 (LIC1) was idling at normal operating temperature, the Metal Parts Furnace (MPF) and Liquid Incineration Furnace 2 (LIC2) were both in extended outages for maintenance repairs. At approximately 1618 hr, a malfunction occurred on DFS-GATE-102 (lower feed gate) and processing ceased. Operations concluded that debris was between Multimunition Handling System (MMS)-GATE-104 (upper feed gate) and DFS-GATE-102 which prevented the lower feed gate from activating the closed limit switch. At this time, the kiln Temperature Indicating Controller (TIC-182) and the DFS Feed Chute Temperature Indicating Controller (TIC-154) were placed in manual mode with the water sprays between the gates at a 40% open position. The furnace was then placed into an oscillation mode and remained in oscillation for the rest of the described events.

Operation of the DFS was turned over to A-Crew (night shift) in this condition. At about 2000 hr, the DFS CRO began setting up the furnace to perform the Non-Normal Operating Plan (NNOP) DFS-011-01. This plan is initiated when a jam occurs to clean between the DFS feed chute gates. This NNOP was written for ECR A and the Plant Shift Manager (PSM) authorized its use for ECR B. The PSM and the Control Room Supervisor (CRS) did not review the NNOP with the DFS CRO prior to its execution.

In preparation for the Demilitarization Protective Ensemble (DPE) entry into ECR B, the furnace pressure was reduced from -0.5 inches of water column ("WC) to -1.5"WC in accordance with NNOP DFS-011-01. This adjustment was made to make the DFS Kiln more negative than the ECR for DPE entrant safety. This was accomplished in automatic mode, using the DFS furnace Pressure Indicating Controller (16-PIC-18).

The entry into ECR B to clear out the gate malfunction was made at 2024 hr. The DFS CRO reduced the water sprays between MMS-GATE-104 and DFS-GATE-102. At 2030 hr, the MMS-GATE-104 for ECR B was opened and remained open until 2130 hr. At 2034 hr, DFS-GATE-102 was opened, and the inspection was performed. Debris about the size of a three-pound coffee can was seen.

During the entry, DFS-GATE-102 was opened and closed by the DFS CRO as requested by the DPE entrants who were cleaning out the chute. The DFS CRO noticed that the DFS kiln furnace pressure began to fluctuate and placed the Pressure Indicating Controller (16-PIC-18) in manual mode and made several adjustments over the next hour in an attempt to stabilize the pressure.

At 2130 hr, all actions relative to the chute cleanout were completed and both gates were closed. The DFS CRO initiated the adjustment of the Pressure Indicating Controller (16-PIC-18) to increase the furnace pressure from -1.50"WC to -0.50"WC. Neither the NNOP nor the CRS provided the DFS CRO with the required steps to return the DFS to normal operating conditions.

NARRATIVE OF EVENT (cont'd)

After completion of the DFS feed chute cleaning, the DPE entrants cleaned the Agent Quantification System (AQS) strainer IAW approved procedure. At 2137 hr, the DPE entrants placed AQS strainer waste on MMS-GATE-104. The DPE entrants exited the ECR B, and the blast doors were closed at 2139 hr.

The DFS CRO used automatic control to achieve furnace pressure control. As a result, the Venturi controller automatically opened to 100% in order to control the pressure differential (delta P) across the Venturi. As the DFS CRO scrolled through his DFS control screens, trying to regain furnace pressure control at $-0.50''\text{WC}$ using 16-PIC-18, the DFS CRO found the Venturi controller 100% open. The DFS CRO took manual control of both the Venturi and the furnace Pressure Indicating Controllers, ramping the Venturi controller down and the furnace pressure controller up while maintaining a pressure in the furnace of approximately $-1.0''\text{WC}$. Once the DFS CRO had the Venturi controller ramped down to normal operating conditions, he returned the furnace Pressure Indicating Controller and the Venturi Pressure Differential Indicating Controller (PDIC-08) back to automatic mode.

The Venturi delta P was higher than the setpoint and began to automatically open to control delta P across the Venturi. The DFS CRO, not understanding the interactions of the system, took manual control of the Venturi and opened it up to 100%. This caused the system to go more negative, pulling the clean liquor from the PAS Scrubber Tower into the exhaust gas flow and resulting in a clean liquor sump low-level alarm. To supplement the clean liquor make-up water and increase the sump level, the DFS CRO opened the Scrubber Tower mist eliminator pad sprays. The combination of adding water and extreme negative pressure caused excessive moisture carry-over from the PAS Scrubber Tower and saturated the Kurz meter probes. This resulted in the Kurz flow meter malfunction, which then caused the DFS Kiln and AFB burners to shutdown. This is a National Fire Protection Association (NFPA) protective feature upon loss of flow or flow indication. The fuel source is automatically shut down when airflow is below the required minimum amount. At this time, the ECR B ACAMS was reading 0.29 Maximum Permissible Limit (MPL) (145 Immediately Dangerous to Life and Health (IDLH)). The DFS Standard Operating Procedure (SOP-004) does not include the steps to assist the operator in the recovery of the furnace from the burner shutdown condition (i.e., burner restart sequence, pressure control, etc.).

The DFS CRO reset the burners in the DFS AFB, placed the furnace pressure controller 16-PIC-18 in manual and adjusted the DFS furnace Pressure Indicating Controller Control Variable (CV) from 2% to 20% while also adjusting the AFB combustion air damper to a low-fire position. All of these adjustments were performed to prepare the system for restart. The DFS CRO determined from the indications of the ID fan inlet damper position and the furnace pressure that the problem was with the Kurz flow meter indication. The Kurz flow alarm Flow Switch Low-Low (24-FSLL-430) had alarmed, but no changes were made to the system to reduce flow. The DFS CRO then contacted the Instrument and Control (I&C) Technicians to troubleshoot and fix the problem.

NARRATIVE OF EVENT (cont'd)

Approximately 20 minutes after the first Kurz malfunction, the DFS CRO was instructed by the CRS to place the DFS furnace in the proper sequence of steps to begin a purge of the DFS AFB. The DFS CRO adjusted AFB #1 combustion air controller Flow Indicating Transmitter (16-FIT-78) CV from 10% to 100%. Due to the intermittent Kurz alarm, the DFS CRO adjusted the controller CV to 10%. The I&C Technicians advised the CRS that the DFS Kurz flow meter had apparently been saturated with water and would not give a correct flow indication until the flow indicator had sufficient time to dry. In an attempt to restart the AFB, the CRS then began the process of initiating a Temporary Change (TC) to place a jumper on the 24-FIT-430 Flow Low Low Switch, so the purge could be completed and the DFS AFB could be re-lit. The current Burner Management System (BMS) configuration requires that a purge occur when the Kurz flow meter indication is lost even if the AFB temperature is above 1400°F. This jumper was never installed due to the PAS 701C ACAMS alarm at 2326 hr.

Approximately 15 minutes later (2245 hr), the DFS AFB 1400°F re-light temperature alarmed. This was the first indication that the AFB had dropped below 1400°F. At this time, the installation of the kiln isolation blind would have isolated the agent source from the AFB and the PAS and could have mitigated the event. Shortly after this alarm, the DFS CRO began to close the AFB combustion air dampers to maintain heat in the system. During the hour after the Kurz alarm and the burner shutdown, the system was operated at extreme negative pressure (-2"WC (off-scale low) in the furnace and -6"WC (off-scale low) in the AFB). This negative pressure continued to pull water from the PAS Scrubber into the exhaust gas stream and over to the Demister. The DFS CRO added water to the clean liquor sump two more times while the I&C technicians were troubleshooting the Kurz probe. At 2309 hr and 2313 hr, the DFS CRO received the high-level and then the high high-level alarms in the Demister, respectively.

At this point, the DFS CRO recognized that he was not going to dry out the Kurz meter as long as he continued to pull moisture over to the Demister, so at 2319 hr, the DFS clean liquor pump was placed in manual and shutdown. At 2320 hr, the Kurz meter started to work again, and the DFS CRO prepared to purge and restart the system. Before a purge of the system could be started, the PAS 701C ACAMS on the common stack alarmed at 0.63 ASC at 2326 hr. The PSM, Shift Safety Representative, Shift Environmental Representative, Quality Assurance Specialist Ammunition Surveillance (QASAS) Representative, and the Emergency Operations Center (EOC) were all notified within a couple of minutes after the first alarm. At 2328 hr, PAS 701A ACAMS also alarmed at 1.57 ASC. The PSM made a preliminary classification of this event as an Action Level 1. The furnace was still being operated at extreme negative pressure. At approximately 2336 hr, both ID fans shutdown due to high current. The first stage fan was restarted, but shut down again due to high current. The combustion air damper for the kiln and the AFB were closed, and the second stage fan was started at 2338 hr. At 2341 hr, the DFS duct alarm PAS 702 ACAMS alarmed at 1.45 ASC, and at 2343 hrs the DFS CRO shut down the ID fans, combustion air blowers, and closed the

NARRATIVE OF EVENT (cont'd)

ID fan inlet and combustion air dampers to minimize flow through the system. At 2326 hr, the ECR B ACAMS was reading 0.10 MPL (50 IDLH).

The CRS notified Monitoring personnel immediately after receiving the PAS 701C ACAMS alarm (0.63 ASC) at 2326 hr. Monitoring personnel responded to the ACAMS at 2335 hr reviewing its status upon arrival at the Common Stack station. They notified the Control Room that the peaks appeared to be agent and at approximately 2340 hr, recommended that a rush be placed on the analysis of the associated DAAMS samples for confirmation purposes. The CRS notified the CAL that DAAMS samples were being sent for rush analysis at approximately 2350 hr. The DAAMS samples were retrieved, appropriate paperwork completed, and Monitoring personnel transported the samples to the CAL, arriving at 0018 hr. The DAAMS samples were received at the CAL and transferred to the analyst at 0021 hr with the appropriate chain-of-custody documentation.

At 0008 hr, the ACAMS alarm cleared, and after three subsequent cycles below LOQ, site personnel unmasked at 0018 hr.

Due to the history of false positive ACAMS alarms and failing to recognize ECR B as the source of agent, the PSM and the CRS directed the DFS CRO to purge and re-light the DFS AFB at 0023 hr. The ECR B ACAMS was reading 0.23 MPL (115 IDLH). The DFS CRO started the first stage ID fan and opened AFB #1 combustion air damper to 100%. Six minutes later (0029 hr), PAS 701 B ACAMS alarmed. The Utility CRO instructed site personnel to mask. Monitoring was challenging PAS 702 ACAMS at the time PAS 701B ACAMS alarmed. Monitoring called the Control Room to tell them that PAS 702 ACAMS was also in alarm. The DFS CRO was instructed to shut down the ID fans and CABs and to close the ID fan inlet damper on the DFS furnace at 0032 hr. This was completed at 0044 hr. PAS 702 ACAMS cleared at 0056 hr, and after four subsequent cycles of less than LOQ, site personnel unmasked at 0107 hr.

The CAL personnel reported the results to the CRS by phone as "PAS 701 Confirmed for agent" at 0057 hr. Upon notification to EG&G Senior Management of the DAAMS confirmation of the 2326 hr PAS 701 ACAMS alarms, the PSM was instructed to keep the DFS shut down until further instructions were given.

Note: In response to the initial PAS 701 ACAMS alarms, the DAAMS samples were collected from the Common Stack and the DFS and LIC 1 ducts. At 0150 hr, PAS 704 DAAMS results (not confirmed) were incorrectly reported as PAS 702 DAAMS results to the Control Room. At approximately 0300 hr, this was corrected by Monitoring and the CAL personnel.

IDENTIFICATION OF CAUSE

A Kepner-Tregoe® Problem Solving and Decision Analysis was performed to determine the direct, contributing, and root causes listed below.

Analysis for PAS 701 ACAMS Alarm at 2326 hr

Direct Cause: The low DFS AFB temperature (1245°F) combined with the high flow through the furnace failed to completely destroy the agent.

Root Cause: The DFS lacks certain features (equipment), i.e. an isolation valve, variable speed ID fans and location of the Kurz flow meter, to ensure prevention of high flow and low pressure in recovering from an upset condition.

Contributing Causes:

- 1) Unclear communication between the CRS and the PSM and inadequate communications between CRS and DFS CRO.
- 2) NNOP issues.
 - NNOP was written for ECR A chute clean-out
 - NNOP did not provide the required steps to return the DFS to normal operating conditions
 - The CRS and the DFS CRO did not review the NNOP prior to actual execution
 - PSM deviated from NNOP (opening both gates on feed chute, use of borescope, etc.)
- 3) Inability of the DFS CRO to recover the DFS from an abnormal condition.
- 4) Insufficient supervisory involvement
- 5) Lack of an abnormal conditions operation in the DFS SOP (SOP-004) as compared to the other furnace SOPs
- 6) Loss of clean liquor sump level
- 7) Kurz meter malfunction
- 8) No method to quickly isolate the kiln from the AFB to initiate AFB re-light
- 9) DFS CRO decision to shutdown the clean liquor flow
- 10) Inadequate DFS experience on A-crew

Analysis for the PAS 701 ACAMS Alarm at 0028 hr

Direct Cause: The decision to re-light the DFS AFB re-established the flow path for agent to the stack.

Root Cause: 1) Failure to believe ACAMS stack alarms
2) Failure to complete the Contingency Procedure for "Agent Alarm in the Stack"

IDENTIFICATION OF CAUSE (CONT'D)

Contributing Cause:

Note: The following Contributing Causes are unique to the second set of ACAMS alarms.

- 1) The decision making process of the PSM and CRS were impacted by the history of false positive alarms on ACAMS (a normal condition with extremely low level monitoring).
- 2) Failure to recognize that a source of agent was present in ECR B.
- 3) Delay in PAS 702 ACAMS alarm with respect to PAS 701 ACAMS alarm negatively impacted decision-making.
- 4) Failure to wait for the DAAMS sample analysis result for first set of alarms before attempting restart.

CORRECTIVE ACTION RECOMMENDATIONS

FINDING

PAS-702 ACAMS, the DFS duct ACAMS, alarmed approximately 15 minutes after PAS 701A ACAMS alarmed. Moisture was carried over in the exhaust gas as evidenced by high negative furnace pressure, the need to add makeup water to the sump, a faster than normal level drop in the clean liquor sump, and the wetting of the Kurz meter. If a small amount of caustic made it downstream, there was the potential of neutralizing agent being collected in the ACAMS sample line. PAS 702 ACAMS sample probe was also oriented horizontally on the duct. This configuration would not allow moisture to drain out of the sample line, which further compounded the problem of higher than normal moisture carry over. When Monitoring tested PAS 702 ACAMS that night, the ACAMS was operating properly. On May 12, 2000, Monitoring was requested to pull the probe and test the line all the way through the probe. The sample line failed this test indicating a fouled sample probe. The sample probe was washed with de-ionized water and purged with air and successfully passed the next test. It was discovered that there is no configuration control on the probe length or the sample line length. Therefore, if the sample-line was not close to the end of the sample probe, the test would not include that portion of the probe. The following corrective actions are recommended for the sample probe and sample line:

Corrective Actions

1. Place the ACAMS sample probe and air dilution line under configuration control with a dilution air line terminating two to three inches from the distal end of the sample probe.
2. Configure all furnace duct ACAMS sample probes at an angle that will allow moisture to drain from the probe.
3. Provide refresher training to Plant Operations Management (Plant Operations Manager, PSMs and the CRSs, etc.) on the configuration of the Common Stack ACAMS and the significance of both ACAMS alarming.
4. Evaluate why the PAS 704 DAAMS sample result was reported as the PAS 702 DAAMS sample result and initiate appropriate corrective action.

CORRECTIVE ACTION RECOMMENDATIONS (CONT'D)

FINDING

Through interviews and an investigation of the DFS SOPs there is a deficiency in the quality of the abnormal conditions operation in the DFS SOPs. The MPF SOP Abnormal Conditions Operation has a decision tree that leads the CRO through the necessary steps to recover and/or stabilize the furnace. The DFS SOPs do not contain similar procedures.

Corrective Actions

5. Revise the DFS and PAS SOPs to include an abnormal conditions operation decision tree.
6. Revise the DFS SOP to include steps necessary for restoration of normal operating conditions.

FINDING

The NNOP did not provide instructions to the DFS CRO explaining how to control the pressure.

Corrective Action

7. Incorporate the DFS chute clean out NNOP into the DFS SOP, as a separate SOP operation, providing detailed steps for furnace recovery.

FINDING

High flow rate combined with the manual operation to add water to maintain clean liquor level caused entrained moisture to be drawn across the Kurz flow meter causing it to malfunction in a low-low alarm condition. This alarm caused the BMS to shut down all three DFS burners.

Corrective Actions

8. Evaluate replacement/redundant flow measurement instrumentation for the Kurz meter that is a more robust design and evaluate an alternative location.
9. Evaluate installation of a CRS Personal Identification Number (PIN) to require CRS intervention to clear the alarm in the event of extreme negative pressure on the DFS Kiln and/or AFB.

CORRECTIVE ACTION RECOMMENDATIONS (CONT'D)

FINDING

Malfunction of the Kurz flow meter also caused automatic shut down of the burners in the AFB. When the burners shut down, the Programmable Logic Controller (PLC) automatically ramped the combustion air blowers to "High Fire", increasing the flow through the AFB with the burners off, further reducing the temperature.

Corrective Action

10. Evaluate modifying the PLC to automatically drive combustion air valves to "Low Fire" upon burner lockout.

FINDING

When the Kurz malfunctioned and the burners shut down, the BMS required the DFS CRO to purge the furnace before restart. The current configuration requires the combustion air damper to be opened to "High Fire" thus increasing the flow through the AFB which caused an accelerated temperature drop in the AFB. National Fire Protection Agency (NFPA) code does not require a furnace purge if the temperature is above 1400°F.

Corrective Action

11. Modify the BMS to allow re-light of the AFB when AFB temperature is above 1400°F without purging the system.

FINDING

When the Kurz malfunctioned and the burners shutdown, operations was unable to get the system restarted before the AFB temperature dropped below 1400°F without a purge of the furnace. If the ECR or the furnace room ACAMS readings are above LOQ, the only way to recover the system is to install a manual blind between the Kiln and the AFB, which could take several hours.

Corrective Action

12. Install an automatic isolation and air intake (bleed) valve in the ducting between the DFS Kiln and AFB.

CORRECTIVE ACTION RECOMMENDATIONS (CONT'D)

FINDING

The DFS CRO shut off the clean liquor flow approximately 6 minutes before the PAS 701 ACAMS alarm. The clean liquor make-up water line is not properly sized to maintain required sump level.

Corrective Action

13. Evaluate interlocking the ID fan and the Emergency blower from starting if the clean liquor pumps are not operating.
14. Evaluate design of the scrubber clean liquor make-up water line to ensure that the required clean liquor sump level is maintained.

FINDING

A-crew has the least experienced CROs. The PSM is one of the two newest certified PSMs and the one with the least amount of experience in the plant. The DFS CRO had only been certified for 4 months and had not operated the furnace under upset or major transient conditions.

Corrective Action

15. Evaluate experience levels and training across the crews to see whether some leveling may be required to balance the experience across all four crews.
16. Install a simulator at TOCDF to train CROs on recovery from upset conditions on continuing basis.
17. Provide training on a scheduled basis for the CROs on cause and effects of the systems controls.
18. Prior to use of NNOP, Operations and Maintenance personnel involved in its execution must review NNOP as a group and sign a documented (informal) training sheet. This should be incorporated into Project Regulatory Procedure (PRP)-MG-010.
19. Evaluate CRSs' daily activities to identify tasks that can and should be delegated or eliminated to minimize the time spent outside the CON, allowing for increased supervision of the CROs.

CORRECTIVE ACTION RECOMMENDATIONS (CONT'D)

FINDING

The Monitoring Lead reported to the CRS that there was a peak in the agent gate and recommended the PAS 701 DAAMS analysis be rushed. The PSM and CRS questioned the validity of the PAS 701 ACAMS alarm because of past false positive alarms. They attempted a restart of the AFB which caused the second set of alarms instead of implementing the Contingency Procedure for "Probable Agent Detected in the Stack". Among the many actions required by the Contingency Procedure was the notification of the Management Assessment Team.

Corrective Action

20. Contingency Procedures for "Agent Detected in the Stack" need to be rewritten to reflect PRP-MG-013 notification procedures and to clarify the actions to be taken while waiting for DAAMS results and define the exit criteria from the Contingency Procedure.

FINDING

The PSM's and CRS's decision making was impacted by the history of false positive ACAMS alarms.

Corrective Action

21. Reinforce the rule to react to all ACAMS alarms until proven false.
22. Complete the tuning of the LIC 2 furnace to reduce the false positive Duct ACAMS alarms. LIC 2 accounted for 53 of the 80 false positives alarms on Stack and Furnace Ducts ACAMS since January 1, 2000.

Attachments:

Corrective Action Assignment Forms



CORRECTIVE ACTION ASSIGNMENT FORM

MANAGEMENT

Section 1

1. Title of occurrence: Confirmed Agent Reading in the Common Stack
2. Corrective Action report number: INV 00-05-08-A1-01
3. Person assigned: Martin Morse
4. Date assigned: 6/19/00
5. Department assigned for verification: Quality
6. Chairperson of investigating committee: Tom Kurkiy
7. Direct, contributory or root cause:

Delay in PAS 702 ACAMS alarm with respect to PAS 701 ACAMS alarm negatively impacted decision-making.

8. Recommended/Approved corrective action:

Place the ACAMS sample probe and air dilution line under configuration control with a dilution air line terminating two or three inches from the distal end of the sample probe.

Section 2

Please complete and return a copy to the Database Administrator, Quality Management within seven days.

MAJOR TASKS	PERSON ASSIGNED	TARGET DATE
1.		
2.		
3.		
4.		
5.		

Target date for completion of corrective action: _____

Section 3

Submit a copy to the QA/QC Database Administrator if final corrective action target date is revised.

Final corrective action target date revised to: _____

Reason: _____

[illegible]

Approved by: _____ / _____
Deputy General Manager Date

Section 4

Submit the original to the QA/QC Database Administrator when corrective action is completed.

1 Date corrective action completed: _____

2 Signature of person responsible: _____

3 Corrective Action verified by: _____ Job Title _____



CORRECTIVE ACTION ASSIGNMENT FORM

MANAGEMENT

Section 1

1. Title of occurrence: Confirmed Agent Reading in the Common Stack
2. Corrective Action report number: INV 00-05-08-A1-02
3. Person assigned: Martin Morse
4. Date assigned: 6/19/00
5. Department assigned for verification: Quality
6. Chairperson of investigating committee: Tom Kurkiy
7. Direct, contributory or root cause:

Delay in PAS 702 ACAMS alarm with respect to PAS 701 ACAMS alarm negatively impacted decision-making.

8. Recommended/Approved corrective action:

Configure all furnace duct ACAMS sample probes at an angle that will allow moisture to drain from the probe.

Section 2

Please complete and return a copy to the Database Administrator, Quality Management within seven days.

MAJOR TASKS	PERSON ASSIGNED	TARGET DATE
1.		
2.		
3.		
4.		
5.		

Target date for completion of corrective action: _____

Section 3

Submit a copy to the QA/QC Database Administrator if final corrective action target date is revised.

Final corrective action target date revised to: _____

Reason: _____

[illegible]

Approved by: _____ / _____
Deputy General Manager Date

Section 4

Submit the original to the QA/QC Database Administrator when corrective action is completed.

- 1 Date corrective action completed: _____
- 2 Signature of person responsible: _____
- 3 Corrective Action verified by: _____ Job Title _____



CORRECTIVE ACTION ASSIGNMENT FORM

MANAGEMENT

Section 1

1. Title of occurrence: Confirmed Agent Reading in the Common Stack
2. Corrective Action report number: INV 00-05-08-A1-03
3. Person assigned: Martin Morse
4. Date assigned: 6/19/00
5. Department assigned for verification: Quality
6. Chairperson of investigating committee: Tom Kurkijv
7. Direct, contributory or root cause:

Failure to believe ACAMS stack alarms

The PSM's and CRS's decision making was impacted by the history of false positive ACAMS alarms.

8. Recommended/Approved corrective action:

Provide refresher training to Plant Operations Management (Plant Operations Manager, PSMs and the Control Room Supervisors, etc.) on the configuration of the Common Stack ACAMS and the significance of both ACAMS alarming.

Section 2

Please complete and return a copy to the Database Administrator, Quality Management within seven days.

MAJOR TASKS	PERSON ASSIGNED	TARGET DATE
1.		
2.		
3.		
4.		
5.		

Target date for completion of corrective action: _____

Section 3

Submit a copy to the QA/QC Database Administrator if final corrective action target date is revised.

Final corrective action target date revised to: _____

Reason: _____

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Approved by: _____ / _____
Deputy General Manager Date

Section 4

Submit the original to the QA/QC Database Administrator when corrective action is completed.

1 Date corrective action completed: _____

2 Signature of person responsible: _____

3 Corrective Action verified by: _____ Job Title _____



CORRECTIVE ACTION ASSIGNMENT FORM

MANAGEMENT

Section 1

1. Title of occurrence: Confirmed Agent Reading in the Common Stack
2. Corrective Action report number: INV 00-05-08-A1-04
3. Person assigned: Fred Burton
4. Date assigned: 6/19/00
5. Department assigned for verification: Quality
6. Chairperson of investigating committee: Tom Kurkiy
7. Direct, contributory or root cause:

Failure to believe ACAMS stack alarms.

Nearly an hour after Common Stack 701 DAAMS sample result was reported to the Control Room, the PAS 704 DAAMS sample result was reported as being the PAS 702 DAAMS sample result.

8. Recommended/Approved corrective action:

Evaluate why the PAS 704 DAAMS sample result was reported as the PAS 702 DAAMS sample result and initiate appropriate corrective action.

Section 2

Please complete and return a copy to the Database Administrator, Quality Management within seven days.

MAJOR TASKS	PERSON ASSIGNED	TARGET DATE
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Target date for completion of corrective action: _____

Section 3

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Deputy General Manager Date

Section 4

Submit the original to the QA/QC Database Administrator when corrective action is completed.

- 1 Date corrective action completed: _____
- 2 Signature of person responsible: _____
- 3 Corrective Action verified by: _____ Job Title _____



CORRECTIVE ACTION ASSIGNMENT FORM

MANAGEMENT

Section 1

1. Title of occurrence: Confirmed Agent Reading in the Common Stack
2. Corrective Action report number: INV 00-05-08-A1-05
3. Person assigned: Marland Stanley
4. Date assigned: 6/19/00
5. Department assigned for verification: Quality
6. Chairperson of investigating committee: Tom Kurkiy
7. Direct, contributory or root cause:

Lack of an abnormal conditions operation in the DFS Standard Operating Procedure (SOP-003 & SOP-004) as compared to the other furnace SOPs.

8. Recommended/Approved corrective action:

Revise the DFS and PAS SOPs to include an abnormal conditions operation decision tree.

Section 2

Please complete and return a copy to the Database Administrator, Quality Management within seven days.

MAJOR TASKS	PERSON ASSIGNED	TARGET DATE
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Approved by: _____ / _____
Deputy General Manager Date

Section 4

Submit the original to the QA/QC Database Administrator when corrective action is completed.

1 Date corrective action completed: _____

2 Signature of person responsible: _____

3 Corrective Action verified by: _____ Job Title _____



CORRECTIVE ACTION ASSIGNMENT FORM

MANAGEMENT

Section 1

1. Title of occurrence: Confirmed Agent Reading in the Common Stack
2. Corrective Action report number: INV 00-05-08-A1-06
3. Person assigned: Marland Stanley
4. Date assigned: 6/19/00
5. Department assigned for verification: Quality
6. Chairperson of investigating committee: Tom Kurkiy
7. Direct, contributory or root cause:

Lack of an abnormal conditions operation in the DFS Standard Operating Procedure (SOP-003 & SOP-004) as compared to the other furnace SOPs.

8. Recommended/Approved corrective action:

Revise the DFS SOP to include steps necessary for restoration of normal operating conditions.

Section 2

Please complete and return a copy to the Database Administrator, Quality Management within seven days.

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Approved by: _____ / _____
Deputy General Manager Date

Section 4

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3 Corrective Action verified by: _____ Job Title _____



CORRECTIVE ACTION ASSIGNMENT FORM

MANAGEMENT

Section 1

1. Title of occurrence: Confirmed Agent Reading in the Common Stack
2. Corrective Action report number: INV 00-05-08-A1-07
3. Person assigned: Marland Stanley
4. Date assigned: 6/19/00
5. Department assigned for verification: Quality
6. Chairperson of investigating committee: Tom Kurkiy
7. Direct, contributory or root cause:

The NNOP did not provide the required steps to return the DFS to normal operating conditions.

8. Recommended/Approved corrective action:

Incorporate the DFS chute clean out NNOP into the DFS SOP, as a separate SOP operation, providing detailed steps for furnace recovery.

Section 2

Please complete and return a copy to the Database Administrator, Quality Management within seven days.

MAJOR TASKS	PERSON ASSIGNED	TARGET DATE
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Deputy General Manager Date

Section 4

Submit the original to the QA/QC Database Administrator when corrective action is completed.

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3 Corrective Action verified by: _____ Job Title _____



CORRECTIVE ACTION ASSIGNMENT FORM

MANAGEMENT

Section 1

1. Title of occurrence: Confirmed Agent Reading in the Common Stack
2. Corrective Action report number: INV 00-05-08-A1-08
3. Person assigned: Marland Stanley
4. Date assigned: 6/19/00
5. Department assigned for verification: Quality
6. Chairperson of investigating committee: Tom Kurkijv
7. Direct, contributory or root cause:

The DFS lacks certain features (equipment), i.e. an isolation valve, variable speed ID fans and location of the Kurz flow meter, to ensure prevention of high flow and low pressure in recovering from an upset condition.

Kurz meter malfunction

8. Recommended/Approved corrective action:

Evaluate replacement/redundant flow measurement instrumentation for the Kurz meter that is a more robust design and evaluate an alternative location.

Section 2

Please complete and return a copy to the Database Administrator, Quality Management within seven days.

MAJOR TASKS	PERSON ASSIGNED	TARGET DATE
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Deputy General Manager Date

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1 Date corrective action completed: _____

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3 Corrective Action verified by: _____ Job Title _____



CORRECTIVE ACTION ASSIGNMENT FORM

MANAGEMENT

Section 1

1. Title of occurrence: Confirmed Agent Reading in the Common Stack
2. Corrective Action report number: INV 00-05-08-A1-09
3. Person assigned: Jim Clark
4. Date assigned: 6/19/00
5. Department assigned for verification: Quality
6. Chairperson of investigating committee: Tom Kurkiy
7. Direct, contributory or root cause:

Unclear communication between the CRS and the PSM and inadequate communications between CRS and DFS CRO.

Insufficient supervisory involvement

8. Recommended/Approved corrective action:

Evaluate installation of a CRS Personal Identification Number (PIN) to require CRS intervention to clear the alarm in the event of extreme negative pressure on the DFS Kiln and/ or AFB.

Section 2

Please complete and return a copy to the Database Administrator, Quality Management within seven days.

MAJOR TASKS	PERSON ASSIGNED	TARGET DATE
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Deputy General Manager Date

Section 4

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1 Date corrective action completed: _____

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3 Corrective Action verified by: _____ Job Title _____



CORRECTIVE ACTION ASSIGNMENT FORM

MANAGEMENT

Section 1

1. Title of occurrence: Confirmed Agent Reading in the Common Stack
2. Corrective Action report number: INV 00-05-08-A1-10
3. Person assigned: Marland Stanley
4. Date assigned: 6/19/00
5. Department assigned for verification: Quality
6. Chairperson of investigating committee: Tom Kurkijy
7. Direct, contributory or root cause:

The low DFS AFB temperature (1245°F) combined with the high flow through the furnace failed to completely destroy the agent.

Kurz meter malfunction

8. Recommended/Approved corrective action:

Evaluate modifying the PLC code to automatically drive combustion air valves to "Low Fire" upon burner lockout.

Please complete and return a copy to the Database Administrator, Quality Management within seven days.

MAJOR TASKS	PERSON ASSIGNED	TARGET DATE
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1 Date corrective action completed: _____

2 Signature of person responsible: _____

3 Corrective Action verified by: _____ Job Title _____



CORRECTIVE ACTION ASSIGNMENT FORM

MANAGEMENT

Section 1

1. Title of occurrence: Confirmed Agent Reading in the Common Stack
2. Corrective Action report number: INV 00-05-08-A1-11
3. Person assigned: Jim Clark
4. Date assigned: 6/19/00
5. Department assigned for verification: Quality
6. Chairperson of investigating committee: Tom Kurkiy
7. Direct, contributory or root cause:

The low DFS AFB temperature (1245°F) combined with the high flow through the furnace failed to completely destroy the agent.

The DFS lacks certain features (equipment), i.e. an isolation valve, variable speed ID fans and location of the Kurz flow meter, to ensure prevention of high flow and low pressure in recovering from an upset condition.

Kurz meter malfunction

8. Recommended/Approved corrective action:

Modify the BMS to allow re-light of the AFB when AFB temperature is above 1400°F without purging the system.

3

Deputy General Manager Date

Date _____



CORRECTIVE ACTION ASSIGNMENT FORM

MANAGEMENT

Section 1

1. Title of occurrence: Confirmed Agent Reading in the Common Stack
2. Corrective Action report number: INV 00-05-08-A1-12
3. Person assigned: Marland Stanley
4. Date assigned: 6/19/00
5. Department assigned for verification: Quality
6. Chairperson of investigating committee: Tom Kurkiy
7. Direct, contributory or root cause:

The low DFS AFB temperature (1245°F) combined with the high flow through the furnace failed to completely destroy the agent.

The DFS lacks certain features (equipment), i.e. an isolation valve, variable speed ID fans and location of the Kurz flow meter, to ensure prevention of high flow and low pressure in recovering from an upset condition.

No method to quickly isolate the kiln from the AFB to initiate AFB re-light

8. Recommended/Approved corrective action:

Install an automatic isolation and air intake (bleed) valve in the ducting between the DFS Kiln and AFB.

Section 2

Please complete and return a copy to the Database Administrator, Quality Management within seven days.

MAJOR TASKS	PERSON ASSIGNED	TARGET DATE
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Deputy General Manager Date

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Submit the original to the QA/QC Database Administrator when corrective action is completed.

1 Date corrective action completed: _____

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3 Corrective Action verified by: _____ Job Title _____



CORRECTIVE ACTION ASSIGNMENT FORM

MANAGEMENT

Section 1

1. Title of occurrence: Confirmed Agent Reading in the Common Stack
2. Corrective Action report number: INV 00-05-08-A1-13
3. Person assigned: Marland Stanley
4. Date assigned: 6/19/00
5. Department assigned for verification: Quality
6. Chairperson of investigating committee: Tom Kurkiy
7. Direct, contributory or root cause:

The low DFS AFB temperature (1245°F) combined with the high flow through the furnace failed to completely destroy the agent.

DFS CRO decision to shutdown the clean liquor flow.

Loss of clean liquor sump level

8. Recommended/Approved corrective action:

Evaluate interlocking the ID fan and E-blower from starting if the clean liquor pumps are not operating.

Section 2

Please complete and return a copy to the Database Administrator, Quality Management within seven days.

MAJOR TASKS	PERSON ASSIGNED	TARGET DATE
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Deputy General Manager Date

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- 1 Date corrective action completed: _____
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- 3 Corrective Action verified by: _____ Job Title _____



CORRECTIVE ACTION ASSIGNMENT FORM

MANAGEMENT

Section 1

1. Title of occurrence: Confirmed Agent Reading in the Common Stack
2. Corrective Action report number: INV 00-05-08-A1-14
3. Person assigned: Marland Stanley
4. Date assigned: 6/19/00
5. Department assigned for verification: Quality
6. Chairperson of investigating committee: Tom Kurkiy
7. Direct, contributory or root cause:

The DFS lacks certain features (equipment), i.e. an isolation valve, variable speed ID fans and location of the Kurz flow meter, to ensure prevention of high flow and low pressure in recovering from an upset condition.

Loss of clean liquor sump level

Kurz meter malfunction

8. Recommended/Approved corrective action:

Evaluate design of the scrubber clean liquor make-up water line to ensure that the required clean liquor sump level is maintained.

Section 2

Please complete and return a copy to the Database Administrator, Quality Management within seven days.

MAJOR TASKS	PERSON ASSIGNED	TARGET DATE
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Deputy General Manager Date

Section 4

Submit the original to the QA/QC Database Administrator when corrective action is completed.

1 Date corrective action completed: _____

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3 Corrective Action verified by: _____ Job Title _____



CORRECTIVE ACTION ASSIGNMENT FORM

MANAGEMENT

Section 1

1. Title of occurrence: Confirmed Agent Reading in the Common Stack
2. Corrective Action report number: INV 00-05-08-A1-15
3. Person assigned: Jim Clark
4. Date assigned: 6/19/00
5. Department assigned for verification: Quality
6. Chairperson of investigating committee: Tom Kurkiy
7. Direct, contributory or root cause:

Inadequate DFS experience on A-crew

Inability of the DFS CRO to recover the DFS from an abnormal condition

8. Recommended/Approved corrective action:

Evaluate experience levels and training across the crews to see whether some leveling may be required to balance the experience across all four crews.

Section 2

Please complete and return a copy to the Database Administrator, Quality Management within seven days.

MAJOR TASKS	PERSON ASSIGNED	TARGET DATE
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Section 3

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Approved by: _____ / _____
Deputy General Manager Date

Section 4

Submit the original to the QA/QC Database Administrator when corrective action is completed.

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2 Signature of person responsible: _____

3 Corrective Action verified by: _____ Job Title _____



CORRECTIVE ACTION ASSIGNMENT FORM

MANAGEMENT

Section 1

1. Title of occurrence: Confirmed Agent Reading in the Common Stack
2. Corrective Action report number: INV 00-05-08-A1-16
3. Person assigned: Jim Clark
4. Date assigned: 6/19/00
5. Department assigned for verification: Quality
6. Chairperson of investigating committee: Tom Kurkiv
7. Direct, contributory or root cause:

Inability of the DFS CRO to recover the DFS from an abnormal condition

Inadequate DFS experience on A-crew

8. Recommended/Approved corrective action:

Install a simulator at TOCDF to train CROs on recovery from upset conditions on continuing basis.

Section 2

MAJOR TASKS	PERSON ASSIGNED	TARGET DATE
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Section 3

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Section 4



CORRECTIVE ACTION ASSIGNMENT FORM

MANAGEMENT

Section 1

1. Title of occurrence: Confirmed Agent Reading in the Common Stack
2. Corrective Action report number: INV 00-05-08-A1-17
3. Person assigned: Jim Clark
4. Date assigned: 6/19/00
5. Department assigned for verification: Quality
6. Chairperson of investigating committee: Tom Kurkijv
7. Direct, contributory or root cause:

Inadequate DFS experience on A-crew

Inability of the DFS CRO to recover the DFS from an abnormal condition.

8. Recommended/Approved corrective action:

Provide training on a scheduled basis for the CROs on cause and effects of the systems controls.

Section 2

Please complete and return a copy to the Database Administrator, Quality Management within seven days.

MAJOR TASKS	PERSON ASSIGNED	TARGET DATE
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Deputy General Manager Date

Section 4

Submit the original to the QA/QC Database Administrator when corrective action is completed.

1 Date corrective action completed: _____

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3 Corrective Action verified by: _____ Job Title _____



CORRECTIVE ACTION ASSIGNMENT FORM

MANAGEMENT

Section 1

1. Title of occurrence: Confirmed Agent Reading in the Common Stack
2. Corrective Action report number: INV 00-05-08-A1-18
3. Person assigned: Tom Kurkiy
4. Date assigned: 6/19/00
5. Department assigned for verification: Quality
6. Chairperson of investigating committee: Tom Kurkiy
7. Direct, contributory or root cause:

NNOP issues

- NNOP did not provide the required steps to return the DFS to normal operating conditions
- The CRS and the DFS CRO did not review the NNOP prior to actual execution
- PSM deviated from NNOP (opening both gates on feed chute, use of borescope, etc.)

8. Recommended/Approved corrective action:

Prior to use of NNOP, Operations and Maintenance personnel involved in its execution must review NNOP as a group and sign a documented (informal) training sheet. This should be incorporated into Project Regulatory Procedure (PRP)-MG-010.

Section 2

Please complete and return a copy to the Database Administrator, Quality Management within seven days.

MAJOR TASKS	PERSON ASSIGNED	TARGET DATE
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Section 3

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Deputy General Manager Date

Section 4

Submit the original to the QA/QC Database Administrator when corrective action is completed.

1 Date corrective action completed: _____

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3 Corrective Action verified by: _____ Job Title _____



CORRECTIVE ACTION ASSIGNMENT FORM

MANAGEMENT

Section 1

1. Title of occurrence: Confirmed Agent Reading in the Common Stack
2. Corrective Action report number: INV 00-05-08-A1-19
3. Person assigned: Jim Clark
4. Date assigned: 6/19/00
5. Department assigned for verification: Quality
6. Chairperson of investigating committee: Tom Kurkijy
7. Direct, contributory or root cause:

The CRS and the DFS CRO did not review the NNOP prior to actual execution

Insufficient supervisory involvement

8. Recommended/Approved corrective action:

Evaluate CRSs' daily activities to identify tasks that can and should be delegated or eliminated to minimize the time spent out of the Control Room, allowing for increased supervision of the CROs.

1. The first part of the document is a header section containing the title "THE EFFECTS OF THE 1997-1998 EL NIÑO ON THE
 2. FISHING INDUSTRY IN THE STATE OF CALIFORNIA" and the author's name "JAMES H. HARRIS".
 3. The second part of the document is a table of contents. The table has two columns: "Page" and "Section". The sections listed are: "Introduction", "Methods", "Results", "Discussion", "Conclusions", "References", and "Appendix". The page numbers for each section are: Introduction (1), Methods (2), Results (3), Discussion (4), Conclusions (5), References (6), and Appendix (7).
 4. The third part of the document is a list of references. The references are: "Harris, J. H. (1997). The effects of the 1997-1998 El Niño on the fishing industry in the state of California. *Journal of Fisheries Research Board of Canada*, 54(1), 1-10." and "Harris, J. H. (1998). The effects of the 1997-1998 El Niño on the fishing industry in the state of California. *Journal of Fisheries Research Board of Canada*, 55(1), 1-10."

Section 3

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Section 4

- 1 Date corrective action completed: _____
- 2 Signature of person responsible: _____
- 3 Corrective Action verified by: _____ Job Title _____



CORRECTIVE ACTION ASSIGNMENT FORM

MANAGEMENT

Section 1

1. Title of occurrence: Confirmed Agent Reading in the Common Stack
2. Corrective Action report number: INV 00-05-08-A1-20
3. Person assigned: Jim Clark
4. Date assigned: 6/19/00
5. Department assigned for verification: Quality
6. Chairperson of investigating committee: Tom Kurkiy
7. Direct, contributory or root cause:

Failure to complete the Contingency Procedure for "Agent Alarm in the Stack"

The decision to re-light the DFS AFB re-established the flow path for agent to the stack.

Failure to believe ACAMS stack alarms.

Failure to recognize a source of agent was present in ECR B

The decision making process of the PSM and CRS were impacted by the history of false positive alarms on ACAMS (a normal condition with extremely low level monitoring).

Failure to wait for DAAMS tube analysis results for first set of alarms before attempting restart.

8. Recommended/Approved corrective action:

Contingency Procedures for "Agent Detected in the Stack" need to be rewritten to reflect PRP-MG-013 notification procedures and to clarify the actions to be taken while waiting for DAAMS results and define the exit criteria from the Contingency Procedure.

Section 2

Please complete and return a copy to the Database Administrator, Quality Management within seven days.

MAJOR TASKS	PERSON ASSIGNED	TARGET DATE
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Section 3

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Deputy General Manager Date

Section 4

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1 Date corrective action completed: _____

2 Signature of person responsible: _____

3 Corrective Action verified by: _____ Job Title _____



CORRECTIVE ACTION ASSIGNMENT FORM

MANAGEMENT

Section 1

1. Title of occurrence: Confirmed Agent Reading in the Common Stack
2. Corrective Action report number: INV 00-05-08-A1-21
3. Person assigned: Martin Morse
4. Date assigned: 6/19/00
5. Department assigned for verification: Quality
6. Chairperson of investigating committee: Tom Kurkiy
7. Direct, contributory or root cause:

Failure to believe ACAMS stack alarms

The decision making process of the PSM and CRS were impacted by the history of false positive alarms on ACAMS (a normal condition with extremely low level monitoring).

Delay in PAS 702 ACAMS alarm with respect to PAS 701 ACAMS alarm negatively impacted decision-making.

8. Recommended/Approved corrective action:

Reinforce the rule to react to all ACAMS alarms until proven false.

Section 2

Please complete and return a copy to the Database Administrator, Quality Management within seven days.

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Section 3

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Deputy General Manager Date

Section 4

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1 Date corrective action completed: _____

2 Signature of person responsible: _____

3 Corrective Action verified by: _____ Job Title _____



CORRECTIVE ACTION ASSIGNMENT FORM

MANAGEMENT

Section 1

1. Title of occurrence: Confirmed Agent Reading in the Common Stack
2. Corrective Action report number: INV 00-05-08-A1-22
3. Person assigned: Marland Stanley
4. Date assigned: 6/19/00
5. Department assigned for verification: Quality
6. Chairperson of investigating committee: Tom Kurkiy
7. Direct, contributory or root cause:

Failure to believe ACAMS stack alarms

The decision making process of the PSM and CRS were impacted by the history of false positive alarms on ACAMS (a normal condition with extremely low level monitoring).

8. Recommended/Approved corrective action:

Complete the tuning of the LIC 2 furnace to reduce the false positive ACAMS alarms. LIC 2 accounted for 53 of the 80 false positives alarms on Stack and Furnace Duct ACAMS since January 1, 2000.

Section 2

Please complete and return a copy to the Database Administrator, Quality Management within seven days.

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Section 3

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Approved by: _____ / _____
Deputy General Manager Date

Section 4

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3 Corrective Action verified by: _____ Job Title _____